Part of Paper #16

Docket No: 224569US 25SD

Applicant Initiated Interview Request Form

Application No.: 09/833,016 and 10/383,944 First Named Applicant: Chen

Examiner: Mr. Frejd and Mr. Teska Art Unit: 2123 Status of Application: Awaiting an office action

Tentative Participants:

(1) James R. Boler (2) Charles L. Gholz

(3) Robert Groover (4) William Peoples

Proposed Date of Interview: July 10, 2003 **Proposed Time:** 10 AM

(1) [ ] Telephonic (2) [x] Personal (3) [ ] Video Conference

Exhibit To Be Shown or Demonstrated: [x] YES [ ] NO

If yes, provide brief description: Plastic Drill Bit Model of the Invention

Issues To Be Discussed

	Issues (Rej., Obj., etc)	Claims/Fig. #s	Prior Art	Discussed	Agreed	Not Agreed
(1)	¶112 Support	14-30		[ ]	[ ]	[ ]
(2)				[ ]	[ ]	[ ]
(3)				[ ]	[ ]	[ ]
(4)				[ ]	[ ]	[ ]

[ ] Continuation Sheet Attached

Brief Description of Arguments to be Presented:

That claims 14-30, which Chen's assignee believes are copies of allowed claims in S.N. 09/635,116, are allowable to Chen; that Chen has an earlier effective filing date; and that the Chen application either should be allowed or placed in an interference with S.N. 09/635,116. SN 10/383,944 is a continuation of SN 09/833,016 Both applications contain claims 14-30. A copy of Chen's 37 CFR 1.604 Request filed June 11, 2003 in SN 10/383,944 is attached hereto.

An interview was conducted on the above-identified application on 14-AUG-03.

NOTE:

This form should be completed by applicant and submitted to the examiner in advance of the interview (see MPEP § 713.01).

This application will not be delayed from issue because of applicant's failure to submit a written record of this interview. Therefore, applicant is advised to file a statement of the substance of this interview (37 CFR 1.133(b)) as soon as possible

(Applicant/Applicant's Representative Signature)

Russell Frejd

(Examiner/SPE Signature)

I:\INTERFERENCE\CASES\224569GRO\PLEADINGS\APPLICANT INITIATED INTERVIEW REQUEST FORM 27 JUN 03.DOC

Dept.: INT

OSMM&N File No. 224569US25SD By: CLG/JRB/wmp

Serial No. 10/383,944

In the matter of the Application of: Chen

For: FORCE-BALANCED ROLLER-CONE BITS, SYSTEMS, DRILLING METHODS, AND DESIGN METHODS

Due Date: NONE

The following has been received in the U.S. Patent Office on the date stamped hereon:

- Dep. Acct. Order Form
- Cover Letter
- Cover Letter
- 37 CFR 1.604 Request for an Interference with an Application

I:\INTERFERENCE\CASES\224569GRO\PLEADINGS\RC 11 JUN 03.DOC

RECEIVED TECHNOLOGY CENTER 3600

03 JUN 11 PM 1: 31

RECEIVED

JUN 1 1 2003

Technology Center 2100

OBLON
SPIVAK
McCLELLAND
MAIER
&
NEUSTADT
P.C.
ATTORNEYS AT LAW

Docket No.: 224569US25SD

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

RE: Application Serial No.: 10/383,944
Applicants: Chen
Filing Date: March 8, 2003
For: FORCE-BALANCED ROLLER-CONE BITS, SYSTEMS, DRILLING METHODS, AND DESIGN METHODS
Group Art Unit: 2123
Examiner: R. W. FREJD (ANTICIPATED)

SIR:

Attached hereto for filing are the following papers:

COVER LETTER
37 CFR 1.604 REQUEST FOR AN INTERFERENCE WITH AN APPLICATION

Our check in the amount of $0.00 is attached covering any required fees. In the event any variance exists between the amount enclosed and the Patent Office charges for filing the above-noted documents, including any fees required under 37 C.F.R 1.136 for any necessary Extension of Time to make the filing of the attached documents timely, please charge or credit the difference to our Deposit Account No. 15-0030. Further, if these papers are not considered timely filed, then a petition is hereby made under 37 C.F.R. 1.136 for the necessary extension of time. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Charles L. Gholz
Registration No. 26,395

22850

James R. Boler
Registration No. 37,058

(703) 413-3000 (phone)
(703) 413-2220 (fax)
I:\INTERFERENCE\CASES\224569GRO\PLEADINGS\SHT PTO 11 JUN 03.DOC

DOCKET NO.: 224569US25SD

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF	:
CHEN	: EXAMINER: R.W. FREJD (ANTICIPATED)
SERIAL NO: 10/383,944	:
FILED: MARCH 08, 2003	: GROUP ART UNIT: 2123
FOR: FORCE-BALANCED ROLLER-CONE BITS, SYSTEMS, DRILLING METHODS, AND DESIGN METHODS	:

COVER LETTER

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313
SIR:

Attached hereto is a 37 CFR 1.604 Request for an Interference between Huang's application serial No. 09/635,116 and Chen's application serial No. 10/383,944. Huang's parent application was assigned to Examiner R. W. Frejd in art unit 2123. On the other hand, Chen's parent application is assigned to Examiner Hoang Dang in art unit 3672. Accordingly, a copy of the 37 CFR 1.604 Request is being submitted to SPE Teska in Art Unit 2123 and to SPE Bagnell in Art Unit 3672 so that the request can be assigned quickly to the appropriate examiner. This matter is urgent because the assignee of the Chen application has been informed by the assignee of the Huang application that the claims copied by Chen have been allowed in Huang's application. Because Chen has an earlier effective filing date than Huang, Chen respectfully requests that the Huang application be withdrawn from issue, if necessary, in order to set up the interference.

Respectfully submitted,

Charles L. Gholz
Registration No. 26,395
Attorney of Record
OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
1940 Duke Street
Alexandria, Virginia 22314
(703) 412-6485 (direct dial)
(703) 413-2220 (facsimile)
CGHOLZ@OBLON.COM (e-mail)

22850

Of Counsel:

James R. Boler
Registration No. 37,058
OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
1940 Duke Street
Alexandria, Virginia 22314
(703) 412-6262 (direct dial)
(703) 413-2220 (facsimile)
JBOLER@OBLON.COM (e-mail)
I:\interference\cases\224569gro\Pleadings\REQ-604 ('944) Ltr 11 Jun 03.doc

DOCKET NO.: 224569US25SD

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF	:
CHEN	: EXAMINER: R.W. FREJD (ANTICIPATED)
SERIAL NO: 10/383,944	:
FILED: MARCH 08, 2003	: GROUP ART UNIT: 2123
FOR: FORCE-BALANCED ROLLER-CONE BITS, SYSTEMS, DRILLING METHODS, AND DESIGN METHODS	:

37 CFR 1.604 REQUEST FOR AN INTERFERENCE WITH AN APPLICATION

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313
SIR:

I. 37 CFR 1.604(a)(1)

Applicant proposes the following count, which is in the format approved by the Commissioner in Orikasa v. Oonishi, 10 USPQ2d 1996, 2003 (Comm'r 1990), and Davis v. Uke, 27 USPQ2d 1180, 1188 (Comm'r 1993):

Claims 1, 5, 10, 16, 22, 23, 24, 25, and 26 of the party Huang's application serial No. 09/635,116

OR

Claims 14, 15, 20, 26, 27, 28, 29, and 30 of the party Chen's application serial No. 10/383,944.

Claims 14-30 presented in the amendment submitted May 27, 2003 correspond to the proposed count. Indeed, the proposed count includes all of the independent claims in that group of claims.

II. 37 CFR 1.604(a)(2)

The other application is application serial No. 09/635,116 filed August 09, 2000 and naming Huang et al. as inventors. If that application is now abandoned, this request is directed to any continuation of that application now pending.

Applicant believes that all claims in application serial No. 09/635,116 or any continuation of that application now pending correspond to the proposed count. Since applicant does not have access to that application, he cannot be sure. This request is based on the fact that the assignee of the Huang application has informed the assignee of the Chen application that the subject matter of Huang's claims 1-27 has been allowed in Huang's application. Applicant does not know the actual claim numbers used in the Huang application. The copy of Huang's claims provided to Chen's assignee by Huang's assignee were number 1-27.

III. 37 CFR 1.604(a)(3)

The interference should be declared because, as shown by the table below, the parties are claiming the same patentable invention.

Chen's Application	Huang's Application
14. A method for determining a volume of formation cut by each one of a plurality of roller cones on a drill bit drilling in earth formations, comprising:	5. A method for determining a volume of formation cut by each one of a plurality of roller cones on a drill bit drilling in earth formations, comprising:
selecting bit design parameters, comprising at least a geometry of a cutting element on the drill bit;	selection bit design parameters, comprising at least a geometry of a cutting element on the drill bit;
selecting at least one characteristic of an earth formation to be simulated as being drilled by the drill bit;	selecting at least one characteristic of an earth formation to be simulated as being drilled by the drilling bit;
simulating drilling of the earth formation, the simulating comprising	simulating drilling of the earth formation, the simulating comprising

calculating from the selected bit design parameters and the selected earth formation characteristic, parameters for a crater formed when each one of a plurality of cutting elements on each of the roller cones contacts the earth formation, the parameters including at least a volume of the crater;

simulating incrementally rotating the bit, and repeating the calculating of the crater parameters for a selected number of incremental rotations; and

combining the volume of each crater formed by each of the cutting elements on each of the roller cones to determine the volume of formation cut by each of the roller cones.

15. A method for balancing a volume of formation cut by each one of a plurality of roller cones on a drill bit drilling in earth formations, comprising:

selecting bit design parameters, comprising at least a geometry of a cutting element on the drill bit;

selecting at least one characteristic of an earth formation to be simulated as being drilled by the drill bit;

simulating drilling of the drill bit through the earth formation, the simulating comprising calculating from the selected bit design parameters and the selected earth formation characteristic, parameters for a crater formed when each one of a plurality of cutting elements on each of the roller cones contacts the earth formation, the parameters including at least a volume of the crater;

simulating incrementally rotating the bit, and repeating the calculating of the crater parameters for a selected number of simulated incremental rotations;

combining the volume of each crater

calculating from the selected bit design parameters and the selected earth formation characteristic, parameters for a crater formed when each one of a plurality of cutting elements on each of the roller cones contacts the earth formation, the parameters including at least a volume of the crater,

simulating incrementally rotating the bit, and repeating the calculating of the crater parameters for a selected number of incremental rotations; and

combining the volume of each crater formed by each of the cutting elements on each of the roller cones to determine the volume of formation cut by each of the roller cones.

16. A method for balancing a volume of formation cut by each of a plurality of roller cones on a drill bit drilling in earth formations, comprising:

selecting bit design parameters, comprising at least a geometry of a cutting element on the drill bit;

selecting at least one characteristic of an earth formation to be simulated as being drilled by the drill bit;

simulating drilling of the drill bit through the earth formation, the simulating comprising calculating from the selected bit design parameters and the selected earth formation characteristic, parameters for a crater formed when each one of a plurality of cutting elements on each of the roller cones contacts the earth formation, the parameters including at least a volume of the crater,

simulating incrementally rotating the bit, and repeating the calculating of the crater parameters for a selected number of simulated incremental rotations;

combining the volume of each crater

formed by each of the cutting elements on each of the roller cones to determine the volume of formation cut by each of the roller cones; and

adjusting at least one of the bit design parameters, and repeating the calculating the crater volume, incrementally rotating and combining the volume simulating until a difference between the combined volume cut by each of the cones is less than the combined volume determined prior to the adjusting the at least one of the bit design parameters.

formed by each of the cutting elements on each of the roller cones to determine the volume of formation cut by each of the roller cones; and

adjusting at least one of the bit design parameters, and repeating the simulating until a difference between the combined volume cut by each of the cones is less than the combined volume determined prior to the adjusting the at least one of the bit design parameters.

17. The method as defined in claim 16 wherein the volume of each of the craters is determined by:

determining an axial force on each of the cutting elements;

calculating, from the axial force on each of the cutting elements, an expected depth of penetration and projected area of contact between each of the cutting elements and the earth formation; and

calculating the volume of each of the craters from the expected depth of penetration and projected area of contact.

18. The method ad defined in claim 17 wherein the axial force acting on each of the cutting elements totals an axial force applied to the drill bit.

19. The method as defined in claim 18 wherein an incremental axial movement of the drill bit corresponding to the incrementally rotating is adjusted to cause the axial force on each of the cutting elements to total the axial force applied to the drill bit, the axial force acting on each of the cutting elements determined with respect to a predetermined relationship between depth of penetration and axial force applied for the cutting element geometry and the earth formation.

16. A method for determining an axial force acting on each one of a plurality of roller cones on a roller cone drill bit during drilling, comprising:

simulating drilling of an earth formation by the roller cone bit, the simulating comprising calculating, from a geometry of cutting elements on each of the roller cones and at least one characteristic of an earth formation being drilled by the drill bit, an axial force acting on each of the cutting elements;

simulating incrementally rotating the bit and recalculating the axial forces acting on each of the cutting elements;

repeating the simulating the incrementally rotating and recalculating for a selected number of incremental rotations; and

combining the axial force acting on the cutting elements on each one of the roller cones to determine the axial force acting on each of the roller cones.

17. The method as defined in claim 16 wherein the axial force acting on each of the cutting elements totals an axial force applied to the drill bit.

1. A method for determining an axial force acting on each one of a plurality of roller cones on a roller cone drill bit during drilling comprising:

simulating drilling of an earth formation by the roller cone bit, the simulating comprising calculating, from a geometry of cutting elements on each of the roller cones and at least one characteristic of an earth formation being drilled by the drill bit, an axial force acting on each of the cutting elements;

simulating incrementally rotating the bit and recalculating the axial forces acting on each of the cutting elements;

repeating the simulating the incrementally rotating and recalculating for a selected number of incremental rotations; and

combining the axial force acting on the cutting elements on each one of the roller cones to determine the axial force acting on each of the roller cones.

2. The method as defined in claim 1 wherein the axial force acting on each of the cutting elements totals an axial force applied to the drill bit.

3. The method as defined in claim 2 wherein an incremental axial movement of the drill bit corresponding to the incrementally rotating is adjusted to cause the axial force on each of the cutting elements to total the axial force applied to the drill bit, the axial force acting on each of the cutting elements determined with respect to a predetermined relationship between depth of penetration and axial force applied for the cutting element geometry and the earth formation.

4. The method as defined in claim 3 wherein the predetermined relationship is determined by laboratory experiment comprising impressing a cutting element

18. The method as defined in claim 17 wherein the volume of each of the craters is determined by:

determining an axial force on each of the cutting elements;

calculating, from the axial force on each of the cutting elements, an expected depth of penetration and projected area of contact between each of the cutting elements and the earth formation; and

calculating the volume of each of the craters from the expected depth of penetration and projected area of contact.

19. The method as defined in claim 18 further wherein the axial force acting on each of the cutting elements totals an axial force applied to the drill bit.

having known geometry onto a selected earth formation, while measuring force on the cutting element and a corresponding depth of penetration of the cutting element into the selected earth formation.

6. The method as defined in claim 5 wherein the volume of each of the craters is determined by:

determining an axial force on each of the cutting elements;

calculating, from an axial force on each of the cutting elements, an expected depth of penetration and projected area of contact between each of the cutting elements and the earth formation; and

calculating the volume of each of the craters from the expected depth of penetration and projected area of contact.

7. The method as defined in claim 6 further wherein the axial force acting on each of the cutting elements totals an axial force applied to the drill bit.

8. The method as defined in claim 7 wherein an incremental axial movement on the drill bit corresponding to the incrementally rotating is adjusted to cause the axial force on each of the cutting elements to total the axial force applied to the drill bit, the axial force acting on each of the cutting elements determined with respect to a predetermined relationship between depth of penetration and axial force applied for the cutting geometry and the earth formation.

9. The method as defined in claim 8 wherein the predetermined relationship is determined by laboratory experiment comprising impressing a cutting element having known geometry onto a selected earth formation, while measuring force on the cutting element and a corresponding depth of penetration of the cutting element into the selected earth formation.

20. A method for balancing axial forces acting on each one of a plurality of roller cones on a roller cone drill bit during drilling, comprising:

simulating the drill bit drilling through an earth formation, the simulating comprising calculating, from a geometry of cutting elements on each of the roller cones and at least one characteristic of an earth formation simulated as being drilled by the drill bit, an axial force acting on each of the cutting elements,

simulating incrementally rotating the bit and recalculating the axial forces acting on each of the cutting elements; repeating the incrementally rotating and recalculating for a selected number of simulated incremental rotations;

combining the axial force acting on the cutting elements on each one of the roller cones; and

adjusting at least one bit design parameter, and repeating the simulating until a difference between the combined axial force on each one of the roller cones is less than a difference between the combined axial force determined prior to adjusting the at least one initial design parameter.

21. The method as defined in claim 20 wherein the axial force acting on each of the cutting elements totals an axial force applied to the drill bit.

10. A method for balancing axial forces acting on each one of a plurality of roller cones on a roller cone drill bit during drilling, comprising:

simulating the rill bit drilling through an earth formation, the simulating comprising calculating, from a geometry of cutting elements on each of the roller cones and at least one characteristic of earth formation simulated as being drilled by the drill bit, an axial force acting on each of the cutting elements,

simulating incrementally rotating the bit and recalculating the axial forces acting on each of the cutting elements; repeating the incrementally rotating and recalculating for a selected number of simulated incremental rotations;

combining the axial forces on the cutting elements on each one of the roller cones; and

adjusting at least one bit design parameter, and repeating the simulating until a difference between the combined axial force on each one of the roller cones is less than a difference between the combined axial force determined prior to adjusting the at least one initial design parameter.

11. The method as defined in claim 10 wherein the axial force acting on each of the cutting elements totals an axial force applied to the drill bit.

12. The method as defined in claim 11 wherein an incremental axial movement of the drill bit corresponding to the incrementally rotating is adjusted to cause the axial force on each of the cutting elements to total the axial force applied to the drill bit, the axial force acting n each of the cutting elements determined with respect to a predetermined relationship between depth of penetration and axial force applied for the cutting element geometry and the

22. The method as defined in claim 20 wherein the at least one bit design parameter comprises a number of cutting elements on at least one of the cones.

23. The method as defined in claim 20 wherein the at least one bit design parameter comprises a location of cutting elements on at least one of the cones.

24. The method as defined in claim 15 wherein the at least one bit design parameter comprises a number of cutting elements on at least one of the cones.

25. The method as defined in claim 15 wherein the at least one bit design parameter comprises a location of cutting elements on at least one of the cones.

26. A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit, the at least one design parameter comprising a parameter selected from the group of a number of cutting elements on each one of a plurality of roller cones, cutting element type, and a number of rows of cutting elements on each one of the plurality of roller cones;

repeating the simulating the bit drilling; and

earth formation.

13. The method as defined in claim 12 wherein the predetermined relationship is determined by laboratory experiment comprising impressing a cutting element having known geometry onto a selected earth formation, while measuring force on the cutting element and a corresponding depth of penetration of the cutting element into the selected earth formation.

14. The method as defined in claim 10 wherein the at least one bit design parameter comprises a number of cutting elements on at least one of the cones.

15. The method as defined in claim 10 wherein the at least one bit design parameter comprises a location of cutting elements on at least one of the cones.

20. The method as defined in claim 16 wherein the at least one bit design parameter comprises a number of cutting elements on at least one of the cones.

21. The method as defined in claim 16 wherein the at least one bit design parameter comprise a location of cutting elements on at least one of the cones.

22. A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit, the at least one design parameter comprising a parameter selected from the group of a number of cutting elements on each one of a plurality of roller cones, cutting element type, and a number of rows of cutting elements on each one of the plurality of roller cones;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until an optimized design is determined.

27. A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until a rate of penetration of the bit through the selected earth formation is maximized.

28. A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until an axial force on the bit is substantially balanced between the roller cones.

29. A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until an optimized design is determined.

23. A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until a rate of penetration of the bit through the selected earth formation is maximized.

24. A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until an axial force on the bit is substantially balanced between the roller cones.

25. A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until a volume of formation cut by the bit is substantially balanced between the roller cones.

30. A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until an optimized design is determined, wherein the simulating comprises:

selecting bit design parameters;

selecting drilling parameters;

selecting an earth formation to be represented as drilled;

calculating from the selected parameters and the formation, parameters for a crater formed when one of a plurality of cutting elements on the bit contacts the earth formation, the cutting elements having known geometry;

calculating a bottomhole geometry, wherein the crater is removed from a bottomhole surface;

incrementally rotating the bit;
repeating the calculating of the crater parameters and the bottomhole geometry based on calculated roller cone rotation speed and geometrical location of the cutting elements with respect to rotation of the bit about its axis.

repeating the adjusting and simulating until a volume of formation cut by the bits is substantially balanced between the roller cones.

26. A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until an optimized design is determined, wherein the simulating comprises:

selecting bit design parameters;

selecting drilling parameters;

selecting an earth formation to be represented as drilled;

calculating from the selected parameters and the formation, parameters for a crater formed when one of a plurality of cutting elements on the bit contacts the earth formation, the cutting elements having known geometry;

calculating a bottomhole geometry, wherein the crater is removed from a bottomhole surface;

incrementally rotating the bit;
repeating the calculating of the crater parameters and the bottomhole geometry based on calculated roller cone rotation speed and geometrical location of the cutting elements with respect to rotation of the bit about its axis.

27. The method as defined in claim 26,

	wherein the calculated crater parameters are derived from laboratory tests comprising a cutting element having selected geometry be impressed on an earth formation sample with a selected force, the tests generating at least a correspondence between penetration depth of said cutting element into the formation and the selected force.

There are no differences between the party Chen's claims and the party Singh's claims listed side-by-side above. Thus, it is clear that the parties are claiming the same patentable invention.

Moreover, Chen submits that the subject matter defined by Singh's dependent claims 3, 4, 8, 9, 12, 13, and 16-19 would have been obvious to a person having ordinary skill in the art in the 1998-2000 time frame from the subject matter defined by their respective independent claims. Therefore, they should also be designated as corresponding to the proposed count.

IV. SUPPORT FOR COPIED CLAIMS

The application of the terms of claims 14-30 to the specification of the parent application is shown below:

Application Claims	Support in the Specification
14. A method for determining a volume of formation cut by each one of a plurality of roller cones on a drill bit drilling in earth formations, comprising:	Page 8 lines 3-5.
selecting bit design parameters, comprising at least a geometry of a cutting element on the drill bit;	Page 16 lines 20-21.
selecting at least one characteristic of an earth formation to be simulated as being drilled by the drill bit;	Page 17 lines 15-18.
simulating drilling of the earth formation, the simulating comprising	Page 17 line 20-page 18 line 1.

calculating from the selected bit design parameters and the selected earth formation characteristic, parameters for a crater formed when each one of a plurality of cutting elements on each of the roller cones contacts the earth formation, the parameters including at least a volume of the crater;	
simulating incrementally rotating the bit, and repeating the calculating of the crater parameters for a selected number of incremental rotations; and	Page 14 line 19-page 15 line 3.
combining the volume of each crater formed by each of the cutting elements on each of the roller cones to determine the volume of formation cut by each of the roller cones.	Page 14 line 26-page 15 line 3.
15. A method for balancing a volume of formation cut by each one of a plurality of roller cones on a drill bit drilling in earth formations, comprising:	See claim 14.
selecting bit design parameters, comprising at least a geometry of a cutting element on the drill bit;	See claim 14.
selecting at least one characteristic of an earth formation to be simulated as being drilled by the drill bit;	See claim 14.
simulating drilling of the drill bit through the earth formation, the simulating comprising calculating from the selected bit design parameters and the selected earth formation characteristic, parameters for a crater formed when each one of a plurality of cutting elements on each of the roller cones contacts the earth formation, the parameters including at least a volume of the crater;	See claim 14.
simulating incrementally rotating the bit, and repeating the calculating of the crater parameters for a selected number of simulated incremental rotations;	See claim 14.
combining the volume of each crater formed by each of the cutting elements on	See claim 14.

each of the roller cones to determine the volume of formation cut by each of the roller cones; and	
adjusting at least one of the bit design parameters, and repeating the calculating the crater volume, incrementally rotating and combining the volume simulating until a difference between the combined volume cut by each of the cones is less than the combined volume determined prior to the adjusting the at least one of the bit design parameters.	Page 17 lines 1-3; page 19 lines 7-21; Figure 6.
16. A method for determining an axial force acting on each one of a plurality of roller cones on a roller cone drill bit during drilling, comprising:	See claim 14.
simulating drilling of an earth formation by the roller cone bit, the simulating comprising calculating, from a geometry of cutting elements on each of the roller cones and at least one characteristic of an earth formation being drilled by the drill bit, an axial force acting on each of the cutting elements;	See claim 14.
simulating incrementally rotating the bit and recalculating the axial forces acting on each of the cutting elements;	See claim 14.
repeating the simulating the incrementally rotating and recalculating for a selected number of incremental rotations; and	Page 19 lines 24-27.
combining the axial force acting on the cutting elements on each one of the roller cones to determine the axial force acting on each of the roller cones.	Page 22 lines 10-19.
17. The method as defined in claim 16 wherein the axial force acting on each of the cutting elements totals an axial force applied to the drill bit.	Page 13 lines 7-9.
18. The method as defined in claim 17 wherein the volume of each of the craters is determined by:	

determining an axial force on each of the cutting elements;	Page 17 lines 3-5.
calculating, from the axial force on each of the cutting elements, an expected depth of penetration and projected area of contact between each of the cutting elements and the earth formation; and	Page 17 lines 3-7.
calculating the volume of each of the craters from the expected depth of penetration and projected area of contact.	Page 17 lines 11-16.
19. The method as defined in claim 18 further wherein the axial force acting on each of the cutting elements totals an axial force applied to the drill bit.	Page 13 lines 7-9.
20. A method for balancing axial forces acting on each one of a plurality of roller cones on a roller cone drill bit during drilling, comprising:	See claim 14.
simulating the drill bit drilling through an earth formation, the simulating comprising calculating, from a geometry of cutting elements on each of the roller cones and at least one characteristic of an earth formation simulated as being drilled by the drill bit, an axial force acting on each of the cutting elements,	Page 19 lines 16-27.
simulating incrementally rotating the bit and recalculating the axial forces acting on each of the cutting elements; repeating the incrementally rotating and recalculating for a selected number of simulated incremental rotations;	Page 17 line 27-page 18 line 1.
combining the axial force acting on the cutting elements on each one of the roller cones; and	Page 22 lines 10-19.
adjusting at least one bit design parameter, and repeating the simulating until a difference between the combined axial force on each one of the roller cones is less than a difference between the combined axial force determined prior to adjusting the	Page 22 lines 16-19.

at least one initial design parameter.	
21. The method as defined in claim 20 wherein the axial force acting on each of the cutting elements totals an axial force applied to the drill bit.	Page 13 lines 7-9.
22. The method as defined in claim 20 wherein the at least one bit design parameter comprises a number of cutting elements on at least one of the cones.	Page 16 lines 13-15.
23. The method as defined in claim 20 wherein the at least one bit design parameter comprises a location of cutting elements on at least one of the cones.	Page 16 lines 13-15.
24. The method as defined in claim 15 wherein the at least one bit design parameter comprises a number of cutting elements on at least one of the cones.	Page 16 line 15.
25. The method as defined in claim 15 wherein the at least one bit design parameter comprises a location of cutting elements on at least one of the cones.	Page 16 line 14.
26. A method for optimizing a design of a roller cone drill bit, comprising:	Page 8 lines 3-5.
simulating the bit drilling through a selected earth formation;	Page 17 line 20-page 18 line 1.
adjusting at least one design parameter of the bit, the at least one design parameter comprising a parameter selected from the group of a number of cutting elements on each one of a plurality of roller cones, cutting element type, and a number of rows of cutting elements on each one of the plurality of roller cones;	Page 16 lines 14 and 26-27.
repeating the simulating the bit drilling; and	Page 22 lines 16-18.
repeating the adjusting and simulating until an optimized design is determined.	Page 22 lines 16-18.
27. A method for optimizing a design of a	See claim 26.

roller cone drill bit, comprising:	
simulating the bit drilling through a selected earth formation;	See claim 26.
adjusting at least one design parameter of the bit;	See claim 26.
repeating the simulating the bit drilling; and	See claim 26.
repeating the adjusting and simulating until a rate of penetration of the bit through the selected earth formation is maximized.	See claim 26.
28. A method for optimizing a design of a roller cone drill bit, comprising:	See claim 26.
simulating the bit drilling through a selected earth formation;	See claim 26.
adjusting at least one design parameter of the bit;	See claim 26.
repeating the simulating the bit drilling; and	See claim 26.
repeating the adjusting and simulating until an axial force on the bit is substantially balanced between the roller cones.	See claim 26.
29. A method for optimizing a design of a roller cone drill bit, comprising:	See claim 26.
simulating the bit drilling through a selected earth formation;	See claim 26.
adjusting at least one design parameter of the bit;	See claim 26.
repeating the simulating the bit drilling; and	See claim 26.
repeating the adjusting and simulating until a volume of formation cut by the bit is substantially balanced between the roller cones.	Page 20 lines 12-17.

30. A method for optimizing a design of a roller cone drill bit, comprising:	See claim 26.
simulating the bit drilling through a selected earth formation;	See claim 26.
adjusting at least one design parameter of the bit;	See claim 26.
repeating the simulating the bit drilling; and	See claim 26.
repeating the adjusting and simulating until an optimized design is determined, wherein the simulating comprises:	See claim 26.
selecting bit design parameters;	Page 16 lines 20-21.
selecting drilling parameters;	Page 17 lines 5-6.
selecting an earth formation to be represented as drilled;	Page 2 lines 8-12.
calculating from the selected parameters and the formation, parameters for a crater formed when one of a plurality of cutting elements on the bit contacts the earth formation, the cutting elements having known geometry;	Page 19 lines 13-27.
calculating a bottomhole geometry, wherein the crater is removed from a bottomhole surface;	Page 20 lines 6-8.
incrementally rotating the bit;	Page 17 line 27-page 28 line 1.
repeating the calculating of the crater parameters and the bottomhole geometry based on calculated roller cone rotation speed and geometrical location of the cutting elements with respect to rotation of the bit about its axis.	Page 19 line 13-27.

V. REQUEST FOR THE BENEFIT OF THE FILING DATES OF APPLICANT'S PRIORITY APPLICATIONS

Applicant claims priority under 35 USC 120 based upon application serial No. 09/833,016 filed April 10, 2001 and application serial No. 09/387,737 filed August 31, 1999. The present application is a straight continuation of the' 016 application and the '016 application is a straight continuation of the '737 application. Therefore, the application of the terms of claims 14-30 to the specification of the present application Section IV above applies to the '016 and'737 applications as well.

The August 31, 1999 filing date of the '737 application precedes the August 09, 2000 filing date of Huang's application serial No. 09/635,116. Therefore, Chen would be the senior party in the interference.

Applicant further claims priority under 35 USC 119(e) based on provisional application No. 60/098,466 filed August 31, 1998.

Applicant is entitled to the benefit of the filing dates of his earlier filed applications for interference purposes if the count reads on at least one adequately disclosed embodiment in the earlier application.[1] Assuming that the examiner recommends to the board applicant's proposed count, applicant clearly meets that standard.

---

[1] Weil v. Fritz, 572 F.2d 856, 865-66 n.16, 196 USPQ 600, 608 n.16 (CCPA 1978).

Respectfully submitted,

Charles L. Gholz
Registration No. 26,395
Attorney of Record
OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
1940 Duke Street
Alexandria, Virginia 22314
(703) 412-6485 (direct dial)
(703) 413-2220 (facsimile)
CGHOLZ@OBLON.COM (e-mail)

22850

Of Counsel:

James R. Boler
Registration No. 37,058
OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
1940 Duke Street
Alexandria, Virginia 22314
(703) 412-6262 (direct dial)
(703) 413-2220 (facsimile)
JBOLER@OBLON.COM (e-mail)
I:\interference\cases\224569gro\Pleadings\REQ-604 ('944) 29 May 03.doc

OBLON
SPIVAK
McCLELLAND
MAIER
&
NEUSTADT
P.C.

ATTORNEYS AT LAW

1940 DUKE STREET
ALEXANDRIA, VIRGINIA 22314
USA

(703) 413-3000
(703) 413-2220 FACSIMILE

OBLONPAT@OBLON.COM

PATENT, TRADEMARK AND COPYRIGHT LAW
AND RELATED FEDERAL AND ITC LITIGATION

WWW.OBLON.COM

FACSIMILE

PLEASE CALL US AT (703) 413-3000 IF THE MESSAGE YOU RECEIVE IS INCOMPLETE OR NOT LEGIBLE

TO	NAME: Examiner Russell Frejd	DATE: July 2, 2003
	COMPANY/FIRM: USPTO/GAU 2123	FAX #: 703-308-5357
	NUMBER OF PAGES INCLUDING COVER: 26	CONFIRM FAX: ■ YES ☐ NO
FROM	NAME: James R. Boler	OUR REFERENCE: 224569US
	DIRECT PHONE #: 703-412-6262	YOUR REFERENCE: 09/833,016 10/383,944

MESSAGE

Per our conversation please find attached the following documents:

1) A copy of the 1.604 Request for S.N. 10/383,944, and
2) A copy of the date-stamped filing receipt dated 6/11/03.